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IS 547 (1968): Sesame Oil [FAD 13: Oils and Oilseeds]



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“Knowledge is such a treasure which cannot be stolen”

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SPECIFICATION FOR
SESAME OIL

(Second Revision)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard
SPECIFICATION FOR
SESAME OIL
(*Second Revision*)

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AMENDMENT NO. 3 JANUARY 1990
TO
IS : 547 - 1968 SPECIFICATION FOR SESAME OIL
(Second Revision)

(*Page 4, clause 2.1.1*) — Substitute the following for the existing clause:

'2.1.1 Refined Sesame Oil — Refined sesame oil means oil which is obtained by expression or solvent extraction of sesame oil bearing materials, deacidified either with alkali or physical refining or by miscella refining, by bleaching with adsorbent earth and/or carbon and deodorized with steam.'

(*Page 6, clause 4.3*) — Substitute the following for the existing clause:

'4.3 Admixture with Other Oils — The material shall be free from admixture of other oils.

4.3.1 The material shall be free from non-edible oils, when tested according to 9, 10, 11, 12, 14, 15 and 16 of IS : 548 (Part 2)-1976*.'

(*Page 6, clause 6.2*) — Add the following new clause after 6.2:

'6.2.1 The containers may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer, BIS marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers, or producers may be obtained from the Bureau of Indian Standards.

*Methods of sampling and test for oils and fats : Part 2 Purity test.

AMENDMENT NO. 4 OCTOBER 1995
TO
IS 547 : 1968 SPECIFICATION FOR SESAME OIL
(Second Revision)

(Page 4, Foreword, clause 0.5) — Add the following clause 0.6 after 0.5 and renumber the subsequent clause:

‘0.6 A scheme for labelling environment friendly products to be known as ECO Mark has been introduced at the instance of the Ministry of Environment and Forests (MEF). The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the BIS Act, 1986 as per the Resolution No. 71 dated 20 February 1991 as published in the Gazette of the Government of India vide GSR 85(E) dated 21 February 1991. For a product to be eligible for marking with the ECO Mark it shall also carry the Standard Mark of BIS for quality besides meeting additional optional environment friendly (EF) requirements. The EF requirements for sesame oil are therefore being included through an amendment.

This amendment is based on the Gazette Notification No. 678 dated 30 August 1994 for Labelling Edible Oils, Tea and Coffee as environment friendly products, published by the Ministry of Environment and Forests.’

(Page 6, clause 4.5) — Add the following clauses after 4.5:

‘4.6 Optional Requirements for ECO Mark

4.6.1 General Requirements

4.6.1.1 The product shall conform to the requirements of quality prescribed under clauses 4.1 to 4.5.

4.6.1.2 The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the norms laid down under the *Water (Prevention and Control of Pollution) Act, 1974*; *Air (Prevention and Control of Pollution) Act, 1981*; *Water (Prevention and Control of Pollution) Cess Act, 1977*, respectively, along with the authorization, if required under the *Environment (Protection) Act, 1986*, while applying for ECO Mark.

4.6.2 Specific Requirements

Amend No. 4 to IS 547 : 1968

4.6.2.1 The product shall not contain aflatoxin, more than 5 mg/kg, when tested by the method prescribed in Appendix A.

4.6.2.2 The pesticide residues, if any, shall not exceed the tolerance limits as prescribed in the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder.

4.6.2.3 Only permitted antioxidants not exceeding the quantities specified against each as prescribed under the *Prevention of Food Adulteration Act, 1954* and *Rules* made thereunder, shall be used, if required.

4.6.2.4 The product shall not contain any of the toxic metals in excess of the quantities prescribed in Table 2.

TABLE 2 LIMITS FOR TOXIC METALS

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO
i)	Lead, mg/kg, <i>Max</i>	5.0	15 of IS 1699 : 1995*
ii)	Arsenic, mg/kg, <i>Max</i>	0.5	do
iii)	Cadmium, mg/kg, <i>Max</i>	1.0	do
iv)	Mercury (total) mg/kg, <i>Max</i>	0.25	do

*Methods of sampling and test for food colours (*second revision*).

(*Page 6, clause 5.1*) — Add the following clause 5.1.1 after 5.1:

‘5.1.1 For ECO Mark the product shall be packed in such packages which are made from recyclable (that is which can be re-processed to manufacture any useful product) or biodegradable materials.’

(*Page 6, clause 6.1*) — Add the following clause 6.1.1 after 6.1:

“6.1.1 For ECO Mark the containers shall be marked with the following information:

- List of identified critical ingredients in descending order of quantity, percent by mass, which shall include ‘made from sesame oil’;
- The brief criteria for which the product has been labelled for ECO Mark; and
- Shelf life of the product.”

(Page 6, clause 8.2) — Add the following Appendix after 8.2:

'APPENDIX A
(Clause 4.6.2.1)

DETERMINATION OF AFLATOXIN

A-1 REAGENTS

A-1.1 Acetone, 70 Percent — 700 ml acetone in 300 ml distilled water.

A-1.2 Acetone, 20 Percent — 200 ml acetone in 800 ml distilled water.

A-1.3 Lead Acetate, 20 Percent — 200 g neutral acetate in distilled water and 3 ml glacial acetic acid, diluted to one litre.

A-2 PROCEDURE

A-2.1 Dissolve 30 g sample in 100 ml hexane.

A-2.2 Extract with 3 × 50 ml 70 percent acetone.

A-2.3 To the extract add 60 ml distilled water and 20 ml lead acetate.

A-2.4 Boil to reduce volume to 150 ml. Cool to about 20°C.

A-2.5 Filter and wash with 20 percent acetone.

A-2.6 Extract filtrate and washings with 3 × 50 ml chloroform.

A-2.7 Pass chloroform layer through anhydrous sodium sulphate.

A-2.8 Concentrate to 50 ml and spot on TLC plate.

A-3 CALCULATION

$$\text{Aflatoxin, mg/kg} = \frac{V \times s \times 1\,000}{v \times m}$$

where

V = volume of extract in ml,

v = volume of extract giving minimum observable fluorescence in μl ,

m = mass of sample in g, and

s = standard toxin giving minimum observable fluorescence in μg .'

(FAD 44)

AMENDMENT NO. 5 MARCH 2002
TO
IS 547 : 1968 SPECIFICATION FOR SESAME OIL
(*Second Revision*)

(*Amendment No. 4, page 2, clause 4.6.2.1*) — Substitute '5 µg/kg' for
'5 mg/kg'.

(FAD 44)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR
SESAME OIL
(*Second Revision*)

0. F O R E W O R D

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 28 August 1968, after the draft finalized by the Oils and Oilseeds Sectional Committee had been approved by the Chemical Division Council and the Agricultural and Food Products Division Council.

0.2 The main producing areas of the sesame seeds in the country are Uttar Pradesh, Madhya Pradesh, Rajasthan, Maharashtra and Andhra Pradesh. On the basis of their colour, sesame seeds are generally classified in the trade into black, brown and white seeds. These are also known by their local names, such as *TIL* and gingelly. Considerable amounts of sesame oil, both in the raw and refined states, are consumed in India for edible purposes and in the manufacture of hydrogenated vegetable oil products, popularly known as *VANĀSPATI*. Since 1947, its incorporation in *VANĀSPATI*, as a latent colouring material has been enforced by the Government of India with a view to providing a test for detecting the adulteration of ghee. The requirements for various grades of the oil have, therefore, been so prescribed in this standard that these grades are suitable for the foregoing purposes. The oil is also used for pharmaceutical purposes.

0.3 This standard was originally published in 1954. In its first revision issued in 1963 the oil from the white sesame seeds grown in certain areas of Tripura, Assam and West Bengal, whose characteristics differed considerably from the requirements prescribed earlier, were included. The oil was classified as Type 1 and Type 2, representing respectively the oil from the rest of the country and the oil from these white seeds. Type 1 was further subdivided into two grades, namely, Grade 1 and Grade 2. The limit for moisture was prescribed to include both moisture and insoluble impurities and values for the Bellier test were provided for both types of oil. The standard covered only the expressed type of oil and as there was an urgent need for the formulation of an Indian Standard for the

solvent extracted type, IS : 4220E-1967* was issued as an emergency standard based on the data made available to the *ad hoc* Consultative Group set up for the purpose. This second revision of IS : 547-1954 has been prepared amalgamating its earlier revision and IS : 4220E-1967*. As a consequence, IS : 4220E-1967* now stands withdrawn.

0.4 In this standard the raw grades 1A and 1B are the same as the grades 1 and 2 of Type 1; and the raw grade IC is the same as Type 2 covered earlier in IS : 547-1963†.

0.5 The requirements laid down in this standard for the expressed type of the oil correspond to the specifications prescribed by the Directorate of Marketing and Inspection in their Vegetable Oils Grading and Marking Rules, 1955. For the purpose of regulating the quality of the solvent-extracted type of the oil, the concerned Indian Standard on the solvent-extracted type of the oil which is incorporated now had been adopted in the relevant schedule of the Solvent-extracted Oil, De-oiled Meal and Edible Flour (Control) Order, 1967. In so far as the edible grades are concerned, this standard takes care of the provisions of the Prevention of Food Adulteration Rules, 1954, as modified from time to time.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for sesame oil for edible and industrial purposes.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given under 2 of IS : 548-1964§ and also those given below, shall apply.

2.1.1 Refined Sesame Oil — Sesame oil obtained by the process of expression or solvent extraction which has been refined by neutralization with alkali, bleached with bleaching earth or activated carbon or both, and deodorized with steam, no other chemical agents being used.

*Specification for solvent-extracted sesame oil.

†Specification for sesame oil (*revised*).

‡Rules for rounding off numerical values (*revised*).

§Methods of sampling and test for oils and fats (*revised*).

2.1.2 Semi-Refined Sesame Oil — Sesame oil obtained by the process of solvent-extraction which has been neutralized with alkali, and with or without bleaching with bleaching earth or activated carbon or both, no other chemical agents being used.

3. TYPES AND GRADES

3.1 The material shall be of the following types and grades:

a) Expressed

Refined Grade,
Grade 1A (Raw),
Grade 1B (Raw), and
Grade 1C (Raw).

NOTE — The Grades 1A and 1B refer to the oil obtained from the black and brown sesame seeds grown in the country, as well as the white sesame seeds grown in areas other than Tripura, Assam and West Bengal, while the Grade 1C refers to the oil obtained from whites as well as black sesame seeds grown in certain areas of Tripura, Assam and West Bengal.

b) Solvent-extracted

Refined Grade,
Semi-refined Grade, and
Grade 1 (Raw).

3.1.1 All the grades of the Expressed type and the Refined grade of the Solvent-extracted type are suitable for direct edible consumption.

3.1.2 The other grades of the Solvent-extracted type are suitable for making *VANASPATHI* and refined oil only, and not for direct edible consumption.

4. REQUIREMENTS

4.1 Description — The material shall be obtained from good quality sesame seed cake or from clean and sound seeds from *Sesamum indicum* Linn. syn, *Sesamum orientale* Linn., fam. Pedaliaceae, by a process of solvent extraction or from the oilseeds by a process of expression.

4.1.1 Solvent-extracted oil shall be obtained from the oleaginous material using solvent hexane conforming to IS : 3470-1966*.

4.2 The material shall be clear and free from rancidity, adulterants, sediment, suspended and other foreign matter, separated water and added colouring and flavouring substances.

*Specification for hexane, food grade.

4.2.1 The clarity of the material shall be judged by the absence of turbidity after keeping the filtered sample at 30°C for 24 hours.

4.3 Admixture with Other Oils — The material shall be free from admixture with other oils, when tested according to the methods prescribed under 20 of IS : 548-1964*.

4.4 The material shall also comply with the requirements given in Table 1.

4.5 Baudouin Test — All the raw grades of the material shall respond to the test prescribed in 20.1 of IS : 548-1964*. The colour of the acid layer obtained in the test with a one percent solution of the oil in refined groundnut oil (*see* IS : 544-1968†), shall be not less than 8 red units on the Lovibond scale in a 1-cm cell when tested by the method described under 13 of IS : 548-1964*.

5. PACKING

5.1 The material shall be supplied in suitable well-closed containers as agreed to between the purchaser and the supplier.

6. MARKING

6.1 The containers shall be marked with the name, including the type and grade, and weight of the material in the container; manufacturer's name and trade-mark, if any; batch number; and the year of manufacture.

6.2 In addition, in the case of the Semi-refined grade and Grade 1 (Raw) of the Solvent-extracted type the containers shall also be suitably marked 'NOT FOR DIRECT EDIBLE CONSUMPTION' (either printed on the label affixed to the container or lithographed or stencilled thereon with indelible ink) in a type size of not less than 50 mm.

7. SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed under 3 of IS : 548-1964*.

8. TESTS

8.1 Tests shall be carried out as prescribed in IS : 548-1964* and IS : 1448‡. Reference to the relevant clauses of that standard are given in col 10 of Table 1.

8.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1960§) shall be used in tests.

NOTE -4 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Methods of sampling and test for oils and fats (*revised*).

†Specification for groundnut oil (*second revision*).

‡Methods of test for petroleum and its products.

§Specification for water, distilled quality (*revised*).

TABLE 1 REQUIREMENTS FOR SESAME OIL
(*Clauses 4.4 and 8.1*)

SL No.	CHARACTERISTIC	REQUIREMENT FOR TYPES							METHOD OF TEST REF TO
		Expressed			Solvent-extracted				
		Refined Grade	Grade 1A (Raw)	Grade 1B (Raw)	Grade 1C (Raw)	Refined Grade	Semi- Grade refined (Raw)	Grade 1	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	Moisture and insoluble im- purities, percent by weight, <i>Max</i>	0.10	0.25	0.25	0.25	0.10	0.25	0.5	5 & 6
ii)	Colour in a 1-in cell on the Lovibond scale, expressed as <i>T</i> + 5 <i>R</i> , not deeper than	2	10	20	20	2	5	—	13
iii)	Refractive index at 40°C	← 1.464 5	to 1.466 5	→ 1.466 2	to 1.469 4	← 1.464 5	to 1.466 5	→	10
iv)	Specific gravity at 30/30°C	← —	0.915	to 0.919	→ 0.916	to 0.923	← 0.915	to 0.919	→ 11
v)	Saponification value	← —	188	to 193	→ 185	to 190	← —	188	to 193 → 15
vi)	Iodine value (Wijs)	← —	103	to 115	→ 115	to 120	← —	103	to 115 → 14
vii)	Acid value, <i>Max</i>	0.5	4.0	6.0	6.0	0.5	0.75	—	7
viii)	Unsaturation matter, per- cent by weight, <i>Max</i>	1.5	1.5	1.5	2.5	1.5	1.5	2.5	8
ix)	Bellier turbidity temperature, °C, <i>Max</i>	—	22	22	22	—	—	—	20.8
x)	Flash point, Pensky-martens, (closed), °C, <i>Min</i>	—	—	—	—	250	125	90	P : 21 of IS : 1448†

*Methods of sampling and test for oils and fats (*revised*).

†Methods of test for petroleum and its products : Flash point (closed) by Pensky-Martens apparatus.

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